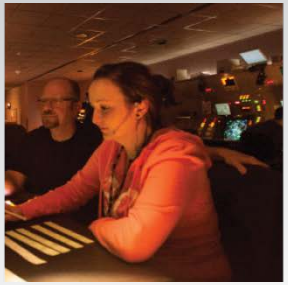
CENTERS OF EXCELLENCE

TECHNICAL TRAINING & HUMAN PERFORMANCE

COE Overview

Government/Academic/Industry Strategic Partnerships

Patricia Watts, Ph.D.

National Program Director, FAA Centers of Excellence

Public Meeting | October 21-22

DoubleTree by Hilton, Crystal City (Arlington), Virginia

www.faa.gov/go/coe

Agenda

- FAA Funding Vehicle Options
- Grants Legislation
- Section 908 - Aviation HR Research
- COE Levels of Oversight, Teams & Control
- FAA COE Funding Levels
- COE Draft Schedule
- Agenda Day 2
- Q and A

DOT Secretary Anthony Foxx with 2014 RAISE Award recipient USAF Lt. Kyle Smith

University of Texas Medical Branch Award Recipient
Administrator Michael Huerta with Tara Castleberry M.D. and Charles Mathers M.D.

FAA Funding Vehicle Options

- Individual Contracts, Interagency Agreements and Other Agreements
- SE 2020 Portfolio of Contracts
- Aviation Research Grants
- Centers of Excellence

Grants Legislation

DOT: 92 Grants Programs ~ $80 B annually

2 Centers Programs

- University Transportation Centers (UTCs)
- Centers of Excellence (COEs)

FAA: Current Grant Authorities

- Airport Improvement (AIP)
- Aviation Research (P.L. 101-508)
- COE (P.L. 101-508) ~ $500 M/Level of Effort

Enacted to enhance FAA's access to resources and research facilities available at colleges, universities and other non-profit research institutions, train and educate future professionals.

2012 Outstanding Students of the Year
Gabriela DeFrancisci and José Bernardo

Section 908 – Aviation HR Research

SEC. 908. CENTER OF EXCELLENCE FOR AVIATION HUMAN RESOURCE RESEARCH.

(a) ESTABLISHMENT.—Using amounts made available under section 48102(a) of title 49, United States Code, the Administrator may establish a center of excellence to conduct research on—

(1) human performance in the air transportation environment, including among air transportation personnel such as air traffic controllers, pilots, and technicians; and

(2) any other aviation human resource issue pertinent to developing and maintaining a safe and efficient air transportation system.

(b) ACTIVITIES.—Activities conducted under this section may include the following:

(1) Research, development, and evaluation of training programs for air traffic controllers, aviation safety inspectors, airway transportation safety specialists, and engineers.

(2) Research and development of best practices for recruitment of individuals into the aviation field for mission critical positions.

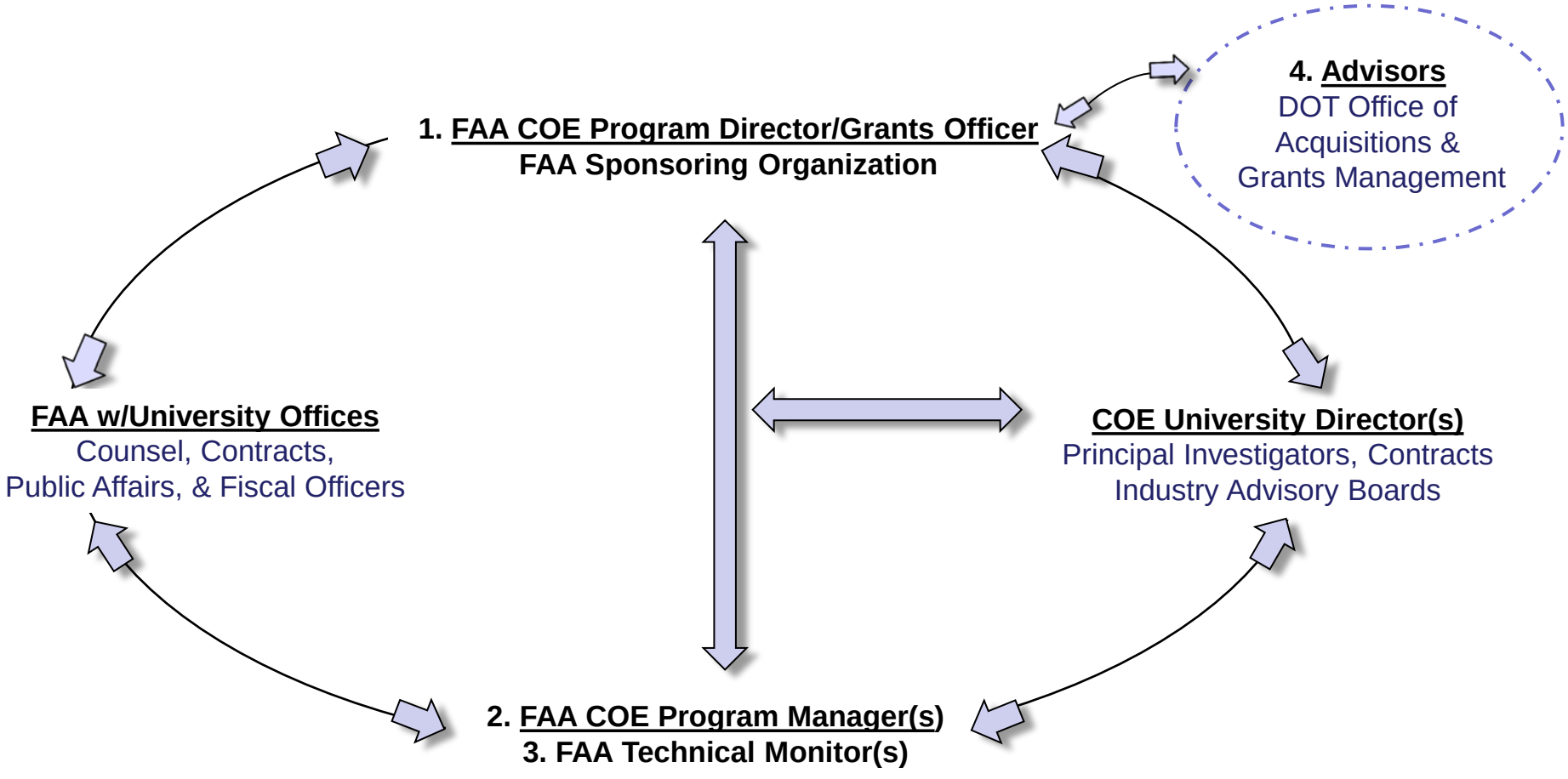
(3) Research, in consultation with other relevant Federal agencies, to develop a baseline of general aviation employment statistics and an analysis of future needs in the aviation field.

(4) Research and the development of a comprehensive assessment of the airframe and power plant technician certification process and its effect on employment trends.

(5) Evaluation of aviation maintenance technician school environments.

(6) Research and an assessment of the ability to develop training programs to allow for the transition of recently unemployed and highly skilled mechanics into the aviation field.

COE Levels of Oversight, Teams & Control



FAA COE Funding Levels

Year	Center of Excellence (Topic Areas)	Sponsor	LOE
2016 - 2021	Technical Training and Human Performance	HQ	$ 2 M
2015 - 2020	Unmanned Aircraft Systems (UAS) - May 8, 2015	HQ	**$ 9.5 M**
2013 - 2023	**Altesrnative Jet Fuels & Environment (AJF&E) – Phase I**	**HQ**	**$ 39.2 M**
2012 - 2022	**General Aviation Safety * (PEGASAS) – Phase I**	**TC**	**$ 20.9 M**
2010 - 2020	**Commercial Space Transportation (CST) > Phase II**	**HQ**	**$ 20.8 M**
2004 - present	Research in the Intermodal Transport Environment (ACERite)	HQ	$ 50.6 M
2004 - present	**Joint COE Advanced Materials (JAMS)**	**TC**	**$ 56 M**
2003 - present	Aircraft Noise and Emissions Mitigation * (PARTNER)	HQ	$ 109 M
2001 - 2014	General Aviation * (CGAR)	TC	$ 33.2 M
1997 - 2007	Airworthiness Assurance * (AACE)	HQ/TC	$ 123.5 M
1996 - (2007)	**Operations Research * (NEXTOR)**	HQ	$ 71 M
1995 - (2013)	**Airport Technology (CEAT)**	HQ/TC	$ 41.4 M
1992 - 1996	Computational Modeling of Aircraft Structures (CMAS)	TC	$ 10.3 M
NOTE: Figures includes Grants & Matching Contributions; Interagency Agreements and * Contracts		**Total**	**>$ 587 M**

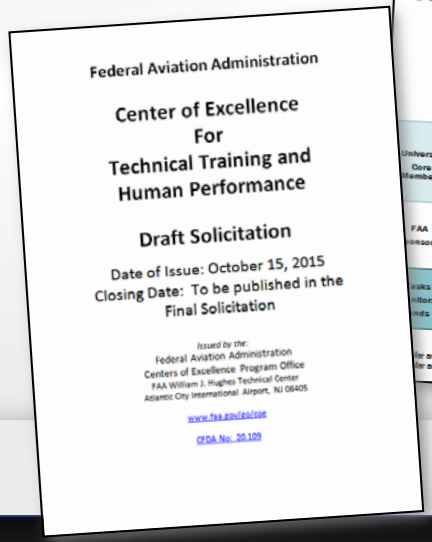
PEGASAS CST JAMS NEXTOR CEAT

COE TT&HP Draft Schedule: 2015-16

- **AOA** - Concurrence w Request to Establish COE — **March 2015**
- **COE Program Management Office (PMO)**
  - Publish Intent to Establish — July
  - Publish Draft Solicitation
- **Office of Primary Interest (OPI) & FAA COE PMO**
  - Host Public Meeting — October
- **FAA COE PMO**
  - Conduct Period of Public Comment — Oct – Nov
  - Publish Final Solicitation — **Jan 2016**
    - Receive Proposals — March
    - Conduct Tech Evaluation & Management/Fiscal Review — March/April
    - Prepare Selection Package for AOA/OST — May
    - Negotiate/Execute Agreements and Grants — June
- ❖ **COE TT&HP Conducts Initial Research – 2016** — Sept

Agenda Day 2

- Review Draft Solicitation
- Discuss Current COE Structures
- Open Discussion
- Wrap Up



Federal Aviation Administration

Center of Excellence
For
Technical Training and
Human Performance

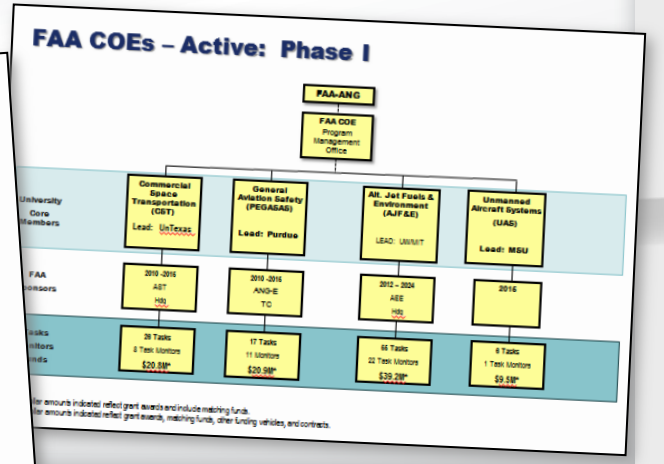
Draft Solicitation

Date of Issue: October 15, 2015
Closing Date: To be published in the Final Solicitation

Issued by the:
Federal Aviation Administration
Centers of Excellence Program Office
FAA William J. Hughes Technical Center
Atlantic City International Airport, NJ 08405

www.faa.gov/go/coe

CFDA No: 20.109



Q & A

FAA Air Transportation
Centers of Excellence

CONTACT:

Patricia Watts, Ph.D.

National Program Director

FAA William J. Hughes Technical Center, ANG-A12
Atlantic City International Airport, NJ 08405
(609) 485-5043 | patricia.watts@faa.gov | http://www.faa.gov/go/coe

DOT Secretary Anthony Foxx with John Tomblin (NIAR/WSU)

Scott Pipkins, George Donohue, Bruce Singer, Virginia Shamy, Satya Atluri, Patricia Watts, Chris Seher

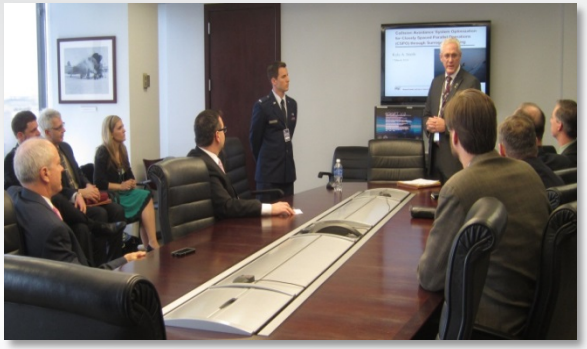
Chris Seher

COE Mission

ENHANCE access to university research capabilities and products by awarding single and multiyear research grants and contracts to colleges, universities and affiliate organizations in multidisciplinary aviation/aerospace-related disciplines

CAPTURE qualities of academic research:

- ❑ *Outreach*
- ❑ *Flexibility*
- ❑ *Innovation*
- ❑ *Education*
- ❑ *Tech Transfer*



Dennis Filler, FAATC Director, introduces 2014 RAISE Recipient to FAA Headquarters Senior Technical Staff

PROMOTE the growth of a scientifically- and technologically-trained U.S. workforce
(Commission on the Future of the US Aerospace Industry)

AUGMENT internal resources and research facilities through long-term public/private partnerships and matching contributions

COE Goals

- Use the COE competitive process to enable AOA to select a world-class team to enhance FAA capabilities with scientists throughout the aviation community, coordinate these activities across organizations to avoid duplication of effort and achieve common goals.
- Engage industry, generate matching contributions, to reduce costs for all, conduct research within a trusted structure using grants for public purpose and contract tasks to obtain FAA deliverables.
- Engage and collaborate with a network of the best and brightest experts throughout the U.S. and abroad.
- Comply with Congressional Intent to establish a new FAA COE to conduct critical research and education jointly with other public and private entities over the next decade.

DOT Garret A Morgan Grants Program join with COE Member, Rutgers University. Students visit FAA Tech Center and the National Airport Pavements Test Facility.

COE University Members (1 of 2)

Auburn Univ.
Boise State Univ.
Boston Univ.
Drexel Univ.
Edmonds Community College
Embry-Riddle Aeronautical Univ.
Florida Inst. of Technology
Florida International Univ.
Florida State Univ.
Georgia Inst. of Technology
Harvard Univ.
Iowa State Univ.
Kansas State Univ.
Massachusetts Inst. of Technology
Mississippi State Univ.
Montana State Univ.
New Mexico Inst. of Mining & Tech
New Mexico State Univ.
Northwestern Univ.
Oregon State Univ.
Pennsylvania State Univ.
Purdue Univ.
Rensselaer Polytechnic Inst.
Stanford Univ.

Andrew Leonard, UND
COE for General Aviation

2010 DOT FAA COE Student of the Year

John Porcari
Deputy Sec. of Transportation with
Chelsea He, MIT
COE for Noise & Emissions

2011 DOT FAA COE Student of the Year

COE University Members (2 of 2)

Texas A&M Univ.
The Ohio State Univ.
Tuskegee Univ.
Univ. of Alaska at Anchorage
Univ. of Alaska at Fairbanks
Univ. of California at Los Angeles
Univ. of Central Florida
Univ. of Colorado at Boulder
Univ. of Delaware
Univ. of Florida
Univ. of Illinois at Urbana Champaign
Univ. of Medicine & Dentistry of NJ
Univ.of Missouri at Rolla
Univ. of North Dakota
Univ.of North Carolina at Chapel Hill
Univ. of Pennsylvania
Univ. of Texas Medical Branch
Univ. of Utah
Univ. of Washington
Washington State Univ.
Wichita State Univ.

Phillip Donovan, UIUC
COE for Airport Technology

2009 DOT FAA COE Student of the Year

Gregory D. Winfree, Deputy Administrator, RITA **w/ Bradley Cheetham, Un. of Colorado at Boulder** COE for Commercial Space Transportation

2012 DOT FAA COE Student of the Year

COE Co-Sponsors

Advanced Transportation R&E Laboratory (ATREL)
Aero Shell
AeroClave
Aerodyne Research Inc.
Air Force Research Laboratory
Air Tran Airways
Air Transport Association of America (ATA)
Airborne Express
Airbus Industries
Aircraft Owners & Pilots Association (AOPA)
Airline Pilots Association (APA)
Airports Council International – North America
Alaska Airmen's Association
Alaska Airways
Alaska Science and Technology
Alcoa Technical Center
AlliedSignal
Allison Engine Company
Aloha Airlines
American Airlines
American Eagle Airlines, Inc.
American Institute of Aeronautics and Astronautics (AIAA)
ARINC Dayton
Battelle
Bell Helicopter TEXTRON
BF Goodrich R&D Center
Boeing Company
Bombardier Aerospace-Learjet
Brookhaven National Lab
California DOT
Cape Air
Cessna Aircraft
Chicago O'Hare International Airport
Cirrus Aviation
Comair, Inc.
Continental Airlines
Delta Airlines
Donaldson Company, Inc.
Draper Laboratory
Elite Air Center
Executive Jet Aviation
Experimental Aircraft Assoc. (EAA)
FedEx Corporation
General Electric Company
General Aviation Mfg. Assn. (GAMA)
Goodrich
Gulfstream Aerospace Corporation
Harris Corporation
Honeywell
Illinois Department of Aeronautics
Indiana Department of Transportation
International Centre for Indoor Environment & Energy, Technical University of Denmark
JENTEK Sensors, Inc.
Livermore Software Technology Corp.
Lockheed Martin Aeronautics Co.
Los Angeles World Airports
Lufthansa
Maryland Aviation Administration
Massachusetts Port Authority
McDonnell Douglas Aerospace
Metron Aviation, Inc.
Metropolitan Washington Airport Authority
NASA
National Business Aviation Assn. (NBAA)
NMS Bio-Defense
Northrop Grumman Corporation
Northwest Airlines
Northwest Composites
O'Hare Modernization Program (OMP)
O'Hare Noise Compatibility Commission
Ohio Department of Development
Ohio Department of Transportation
Pratt & Whitney
Professional Flight Attendants Association
Raytheon Aircraft Company
Regional Airport Authority of Louisville and Jefferson County
Rockwell International
Rolls Royce
SAE International
San Francisco Inter. Airport/Community Roundtable
Sandia National Laboratories
Seagull Technology
Sikorsky Aircraft
Southern Air Transport
Southern California Association of Governments
Southwest Research Institute
Spitfire Aviation Partners
SRI International
Illinois Dept. of Transportation
STERIS Corporation
Sun Microsystems
Transport Canada
United Airlines
United Parcel Service
US Airways
US DOT Volpe National Trans. Systems Center
US EPA
Virginia Department of Transportation
Wyle Laboratories

Center of Excellence Benefits

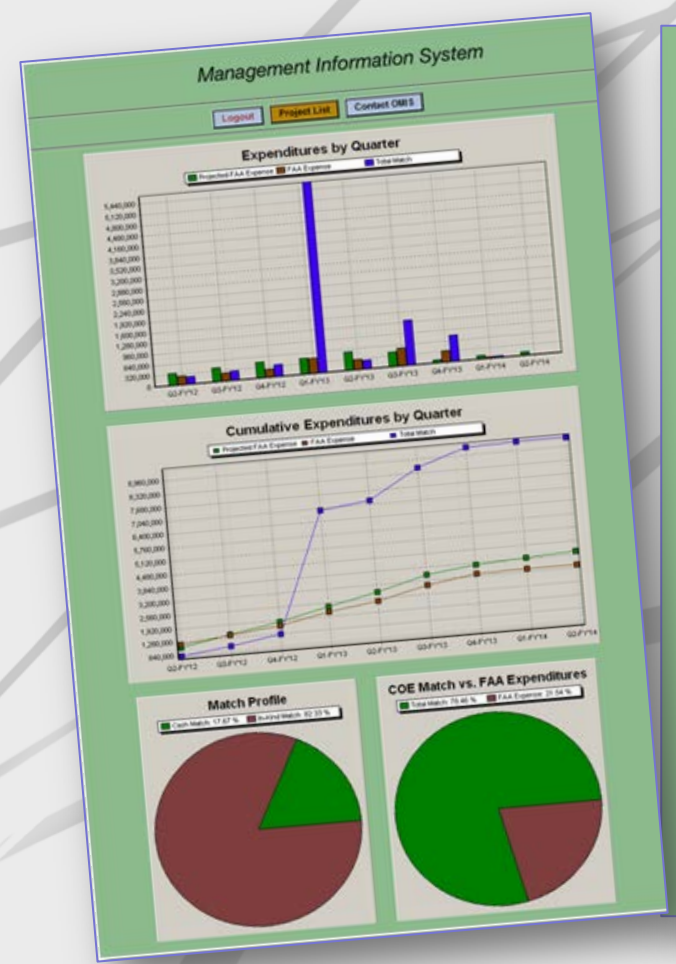
- **Promote** academic, government & industry scientific networks prepared to enhance the safety, security & efficiency of the national airspace system
- **Augment** government resources ($:$) and leverage funds through flexible and responsive public/private partnerships
- **Expand** the U.S. math & science pipeline, support STEM goals, and facilitate aerospace recruitment opportunities
- **Provide** a formal strategy & trusted structure to coordinate a national research agenda and related education and training
- **Advance** U.S. technology and expertise while satisfying Congressional mandates

Congressman Oberstar meets with COE Students & Faculty
at TRB Council of University Transportation Centers Awards Ceremony celebrating the Outstanding Students of the Year

"The nation must immediately reverse the decline in and promote the growth of a scientifically and technologically-trained U.S. aerospace workforce."

− Final Report of the Commission on the Future of the United States Aerospace Industry

Sample COE Financial Roll-Up Data



FAA Cash by Quarter

Date	Projected	Running Sum	Actual	Running Sum
Q2(Jan-Mar) FY2012	$370,544	$370,544	$277,335	$277,335
Q3(Apr-Jun) FY2012	$420,738	$791,282	$245,173	$522,508
Q4(Jul-Sep) FY2012	$485,841	$1,277,124	$257,969	$780,476
Q1(Oct-Dec) FY2013	$485,841	$1,762,965	$450,800	$1,231,277
Q2(Jan-Mar) FY2013	$547,016	$2,309,981	$305,933	$1,537,210
Q3(Apr-Jun) FY2013	$431,433	$2,741,414	$545,467	$2,082,677
Q4(Jul-Sep) FY2013	$100,594	$2,842,009	$335,887	$2,418,564
Q1(Oct-Dec) FY2014	$113,094	$2,955,103	$52,401	$2,470,966
Q2(Jan-Mar) FY2014	$121,327	$3,076,430	$0	$2,470,966
Totals	$3,076,430		$2,470,966	

COE Matching by Quarter

Date	Cash Match	Running Sum	In Kind Match	Running Sum	Total Match	Running Sum
Q2(Jan-Mar) FY2012	$178,998	$178,998	$52,687	$52,687	$231,684	$231,684
Q3(Apr-Jun) FY2012	$230,764	$409,762	$51,142	$103,829	$281,907	$513,591
Q4(Jul-Sep) FY2012	$205,305	$615,066	$164,741	$268,571	$370,046	$883,637
Q1(Oct-Dec) FY2013	$339,242	$954,308	$5,334,858	$5,603,428	$5,674,099	$6,557,736
Q2(Jan-Mar) FY2013	$149,694	$1,104,002	$111,888	$5,715,316	$261,582	$6,819,318
Q3(Apr-Jun) FY2013	$251,933	$1,355,934	$1,092,136	$6,807,452	$1,344,068	$8,163,386
Q4(Jul-Sep) FY2013	$166,110	$1,522,044	$612,931	$7,420,383	$779,041	$8,942,428
Q1(Oct-Dec) FY2014	$68,833	$1,590,877	($9,245)	$7,411,138	$59,588	$9,002,015
Q2(Jan-Mar) FY2014	$0	$1,590,877	$0	$7,411,138	$0	$9,002,015
Totals	$1,590,877		$7,411,138		$9,002,015	

Customize Rollup Charts — Update Charts

Select dates and projects to be included in rollups. Then press "Update Charts" to redraw the charts. Pressing "All Projects", "All Grants", etc... is a quick way to select groups of projects. You still need to press "Update Charts" to see the results. Netscape users may also have to reload the page before they will see the new charts

Dates: 1/2012 to 1/2014 Select: All Projects | All Grants | All Contracts | None

Rollup	G.A./D.O.	Lead Org.	Title	Funding	State
☑	184	CU	Human Rating of Commercially Operated Spacecraft	Grant	Act
☑	185	SU	Unified 4D Trajectory Approach for Integrated Management	Grant	Act
☑	186	SU	Space Environment Modeling/Prediction-SU	Grant	Act
☑	186	CU	Space Environment Modeling/Prediction-CU	Grant	Act
☑	187	CU	Space Situational Awareness Improvements	Grant	Act
☑	193	CU	Role of the COE-CST in Encourage, Facilitate and Promote-CU	Grant	Act
☑	193	SU	Role of the COE-CST in Encourage, Facilitate and Promote-SU	Grant	Act
☑	220	NMSU	Space Operational Framework for Commercial Space Launch Standards	Grant	Act
☑	228	NMT	Magneto-Elastic Sensing for Structural Health Monitoring	Grant	Act
☑	241	UF	High Temperature, Optical Sapphire Pressure Sensors for Hypersonic Vehicles-UF	Grant	Act
☑	241	FSU	High Temperature, Optical Sapphire Pressure Sensors for Hypersonic Vehicles-FSU	Grant	Act
☑	244	CU	Autonomous Rendezvous and Docking for Space Debris Mitigation-CU	Grant	Act
☑	244	SU	Autonomous Rendezvous and Docking for Space Debris Mitigation-SU	Grant	Act
☑	244	UF	Autonomous Rendezvous and Docking for Space Debris Mitigation-UF	Grant	Act